



**PHOTOGRAPHIC
APPARATUS, PROCESSES,**

&c. &c.

MURRAY & HEATH.

[ENTERED AT STATIONERS' HALL.]

1859

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PHOTOGRAPHIC APPARATUS, PROCESSES,

&c. &c.

Warned by the stir among Photographers, that the commencement of another season is at hand,—that, perhaps, in a few days calm weather and sunshine will witness the active labours of many of the followers of the Art,—we ask permission to address this Circular to our own patrons and friends, and to all who are interested in the progress of Photography.

Our object is to invite attention to certain new forms of Apparatus, and to other Improvements and Additions we have brought out during the past year; selecting particularly all such as possess the merit of usefulness, and have stood the test of actual work.

We propose also to speak of other matters of interest to those who watch the advances of Photography; for, that advances are being made, and that its applications and usefulness are daily increasing, must be admitted. The last annual report of the Council of the Photographic Society says—

“Happily no anniversary meeting has yet passed away without recording, as the fruit of the year’s labour, the acquisition of some new treasure from nature’s inexhaustible mine of wealth. Nor will this year be an exception to the usual rule. * * * * We have to congratulate you upon progress made in many of the routes along which Photographers are pursuing their researches.”

To improved appliances and contrivances a certain share of this progress is due. This is conceded, and in such favourable terms

with respect to ourselves, in the January number of the *Art Journal*, in an article upon Photographic Apparatus, that we may be excused for introducing here the following portion of it—

“Nothing has contributed so largely to the advancement of photography as the skill and industry that has been bestowed upon the *apparatus* required. Without the improved optical arrangements, and without the numerous mechanical appliances which have enabled the Photographer to meet all the difficulties of his art, sun pictures—notwithstanding the increased sensibility, and the facilities which chemical science has secured—could not have advanced much beyond those imperfect productions that were regarded with wonder in the infancy of the art, but which we now reject as unworthy of places in our portfolio. In many of the numerous notices of the progress of Photography which have, during the last eighteen years, appeared in the *Art-Journal*, we have constantly insisted upon the importance of avoiding the cost, too frequently devoted to the ornamentation of instruments, and to expend liberally to secure the best possible appliances in the least possible space.”

“Many of those principles have been so admirably secured by Messrs. MURRAY and HEATH, of Piccadilly, whose establishment we have lately visited, that we feel bound to direct attention to them.”

Those of our friends who use, or know our Apparatus, are aware of the care we also bestow upon the workmanship, and upon the selection of materials. The two following extracts which are confirmatory of this, need from us no other remark than the expression of the gratification the possession of such testimonials gives us.

LORD ELGIN'S MISSION TO CHINA.

The following, from a letter dated Tien-tsin, July 6th 1858, relates to the Apparatus we had the privilege to supply to Lord Elgin. After referring to a series of Negative Plates, The Hon. F. Bruce, the bearer of the new treaty, is to bring to England, the letter continues thus :—

“I have not before had the opportunity of telling you how excellent in every respect I have found your Apparatus to be. The Camera has been subject to violent alternations of temperature and to long exposure in the blazing sun (the thermometer is at this moment 96° in a shaded room), and a few days ago everything was not only damp, but wet; and yet all is in most perfect condition.”



THE REV. W. ELLIS' WORK ON MADAGASCAR.

In this now well-known Book, at page 444, Mr. Ellis writes :—

“It perhaps but just in connexion with this subject, to state that my Camera—
“which was large, capable of taking a picture 16-inches square—and the other
“Apparatus worked well the whole time, and seemed scarcely affected either by the
“intense and dry heat of the capital, or the saturating moisture after the heavy rains
“on the coast. The Camera was of mahogany, and light, and stood much better
“than Cameras of walnut, which I had taken out on my former visits. The Apparatus
“was all made by Messrs. MURRAY and HEATH, of Piccadilly.

That our efforts to produce superior Apparatus, “the best possible appliances,” and good workmanship, have received the appreciation we hoped for, is evidenced by the fact of our being the manufacturers to Her Majesty the Queen, and the Government Departments, including the Foreign Office, the Council of India, the Board of Ordnance, the Admiralty, the Board of Trade, and the Artillery Institution, Woolwich; Lord Elgin's Mission to China; Dr. Livingstone's Expedition to Africa; the Siamese Embassy; and to the most distinguished Photographers both professional and amateur.

That this result is partly due to certain advantages of position we have enjoyed we very gratefully admit, not the least of which is our early connexion with the chief discoverers of the Photographic processes: our position and knowledge, as the actual manufacturers of the highest class of scientific instruments, is also an advantage of some consequence over those who are merely the sellers of Photographic Apparatus; and as manufacturers, we reap the benefit which arises from having constantly to carry out the schemes and experimental Apparatus of others.

It remains now for us, before passing to the object we have mainly in view, to offer our best thanks and acknowledgements to all our patrons and friends, and to all who have conveyed to us so many gratifying expressions of approval. We do this sincerely and grate

fully, and without reserve, for we feel we have given and intend to give satisfaction;—our anxious desire being to retain the good opinion formed of us, and to merit that, which at all times, we beg our friends to be good enough to bear in mind is of the utmost service and value to us,—*their recommendation.*

As we shall seek to obtain for this letter as extended a circulation as possible, and as we propose to issue from time to time a description of New Apparatus and Processes in the manner which here follows, a considerable portion of the foregoing has been written for the information of those who do not know us, and as introductory to the purpose here named.

With this explanation we proceed.

In the Annual Report of the Council of the Society previously mentioned, occur these words:—

“In the production of negative pictures the old wet-collodion process still maintains its pre-eminence. It appears, indeed, to have been but little improved in the theory of its working, but to have become more certain in its results, partly through the increasing care bestowed upon the preparation of materials, and partly through the growing experience of its followers.”

This pre-eminence is, we believe, generally admitted—at all events improvements and experiments now in course of progress in any of the rival processes, will hardly influence the preparations already made for working the wet process during the coming season.

And here, in speaking of these rival processes, let us address a few words to those who commence with any one of them, their practice and experience of Photography. It can easily be understood that there is a certain charm in being able to obtain the results which such processes afford; it would, however, be very desirable that the operator should compare these results with a really fine negative by the wet process. We say this, because we know from daily experience, that a very large number of those who practice and delight in Photography, are unacquainted with the qualities of a fine negative.

Granting that the comparison here indicated is made, and it is discovered that the negatives by any one of the new processes, are deficient in qualities they ought to possess,—and if the utmost efforts and care of the operator fail in producing them,—then it must be admitted that his process, although a new one, is inferior to the old, and to the extent of the deficiency, is a step in the wrong direction.

Not the least disparagement is implied or intended of any of the new processes, many of which, are, at this moment being carefully experimented with at the hands of their discoverers and advocates, and may yet, in all respects, rival the old and more inconvenient method.

We submit, however, that comparisons made at this present time, prove that first-rate results, as a rule, are largely in favour of the wet process; one fact alone is sufficiently confirmatory of this, viz.—the great excess of wet collodion pictures in all the exhibitions. No doubt most excellent results, and beautiful negatives, have been produced by some of the new processes, but it appears that these have generally come from the hands of extremely careful manipulators—such, for instance, as Mr. Llewelyn and Mr. Rosling.

Admitting, therefore, the pre-eminence of the wet process, our aim has been to improve, and render as portable as possible, the whole of the apparatus required for it, both in the field and elsewhere.

THE CAMERA.

This we have made in two ways, viz:—*Rigid*, with folding bottom board, the interior fitted with a Box for Lens, Chemicals, &c.,—the Admiralty Pattern:—and *Portable*, having a bellows body upon the accordion principle, and most carefully contrived arrangements to insure firmness and rigidity. This class of Camera is very much approved, and is admitted to be all that is required. It should b

explained that in most instances we recommend *square* Cameras, having carriers the size of the ordinary plates; the operator being thus enabled to take his picture with its *greatest length* either in a vertical or horizontal direction without altering the position of the Camera.

NEW PORTABLE JOINTED STAND.

In this stand, the objections made to the jointed stands have been entirely obviated; it possesses likewise the recommendations of being light and strong, and (when in use) perfectly firm and rigid.

FIELD BOX, &c.

By our system the weight and bulk of the packages required, is most materially reduced; for field and out-door work, we always arrange the Camera and field boxes as separate packages. Our new field box we particularly invite attention to on account of its convenience and portability; it is arranged for plates of one, two, or three sizes; the plate-grooves being made of gutta-percha, and of a form which cannot injure the wet film; indian-rubber cushions are placed above and below the plates, and a draining tray underneath them.

The other fittings of the box are for Chemicals, Bottles, &c., and these are contrived in such a manner as greatly to economise space, and yet most fully to answer the purpose.

LENSES.

The past year has been most prolific in the production of new forms and combinations of Lenses, among which rank as the most important, the Petzval, the Orthoscopic of Voigtlander, the Orthographic of Ross, and the Grubb. At this moment we submit that it is too early to speak of the positive advantages of any of the above,

either over each other, or over certain of the old forms. Carefully conducted experiments justify us however in saying, that those who possess *really good* Lenses by any manufacturer, should for the present remain satisfied with them. Present purchasers and the possessors of Lenses that do not reach a high standard of excellence, will naturally prefer the new forms. Of these we shall keep in stock Ross' Orthographic, which, beyond the qualities mentioned by Mr. Howlett, possesses the recommendation of portability. We also place at the command of our customers the Lenses of any other maker, either English or Foreign, provided their qualities are on a par with the knowledge and requirements of the times. We invite attention also to our own Lenses, on account of a new and convenient arrangement for taking either views or portraits.

Under this head, we may also mention the great improvements made in the mode of using and changing diaphragms, one of the chief, as it is the most effective and beautiful, being that of M. Maugey, lately brought out by us.

SMARTT'S PHOTOGRAPHIC TENT.

The article in the *Art Journal*, previously referred to, says—

“The difficulties attending photography in the open air have led to many contrivances, each one more or less ingenious, for the purpose of overcoming them. We have not seen anything so complete in all its requirements as the photographic tent of Mr. Smartt. This tent is rectangular in form, is six feet high in the clear, and three feet square, affording table space equal to thirty-six inches by eighteen inches, and ample room for the operator to manipulate with perfect ease and convenience. The chief feature in its construction is the peculiarity of its frame-work, which constitutes, when erected, a system of triangles, so disposed as to strengthen and support each other. The table is so made that when not in use it will fold up; attached to it is a ‘portable tray,’ made of water-proof material, which obviates the necessity of carrying a dish for developing; a tube is connected to the tray, by which all waste liquid is conveyed outside the tent; means of ventilation are also provided. A water-bottle of a very convenient and portable form has likewise been contrived: the entire weight of the tent is twenty pounds, and it can be easily erected or taken down by one person.”

More than seventy of these Tents have been sold since their introduction last year; they have formed a portion of all our important sets of apparatus, and among the professional Photographers, have been made for Mr. Fenton, Mr. Bedford, and Mr. Lovell Reeve. The experience we have derived from their manufacture has originated various minor improvements and alterations,—and altogether we believe we are justified in saying that this Tent is the most serviceable and best constructed in use.

Mr. Bedford says in one of his letters:—

“The other day I was at Lichfield taking views, with one of your Smartt’s Tents, and I was quite charmed to find how delightfully I could work in it—plenty of room, plenty of light, and what is more, ventilation, too. The table and indian-rubber tray are very convenient; the arrangement with regard to the nitrate bath, very good; and there seems to be a place for every thing you require.

And Messrs. Taylor and Lovell Reeve, in speaking of their recent tour in Brittany, say:—

“We were much pleased with Smartt’s Tent; it is very convenient and portable, and we should certainly use it in any future excursions of the kind.”

LAKE PRICE’S DARK BOX.

We were intrusted by this gentleman to carry out his plan for a Dark Manipulating Box, which is thus described at page 170 in his book upon Photography:—

“This Box contains the whole of the Photographer’s material of Camera, Lenses, Baths, &c., and at the same time opens into a rigid and sufficing operating space, with shelves, sink, and every necessary appliance, answering most admirably for plates up to 12 by 10, which, with the minute qualities of photographic representation, is really large enough for most objects.”

Availing ourselves of the form and construction of this Box, we have made an addition to it which may be of some service in taking instantaneous pictures; that is, for special purposes and occasions it

can be used as, and in lieu of, a Camera; the Lens (uncovered from the inside) being fitted to one end of the Box, and the Sensitized Plate placed in a frame or holder attached to a sliding movement within the Box. The operator by this arrangement is enabled *to prepare his plate, focus, and obtain his picture*, without moving from the inside of the Box, and this with the least possible loss of time, or of the sensitiveness of the Plate.

BATHS AND DIPPERS.

The question which has arisen as to the action of the Nitrate Solution on Gutta Percha, or rather upon the preparation of it used for Baths, has led us to adopt the use of Glass; both the *Bath and tight cover* being made of this material, protected by a mahogany case. It need not be remarked that the mode of fitting these Baths, which are not only quite water-tight, but answer perfectly, is one in which the utmost accuracy is required at the hands of the maker.

Mr. Lake Price recommends the use of a Dipper of pure Silver, and he points out the particular form he considers the best for this purpose. These we have made, and in special instances, and in very expensive sets, it may be desirable to use them; but, adopting nearly the same form, we have made also a Dipper for Glass Baths of the *purest Gutta Percha*,—these are inexpensive, and have given great satisfaction.

COLLODION.

Success must of course greatly depend upon the quality and condition of the Collodion used. It is but a few years ago that there were but two or three makers of note and reputation,—now it is difficult to carry out our desire to possess all the first-rate Collodions. In London there are numbers of excellent manufacturers; while the

provincial towns also have supplied Collodions which possess the best recommendations.

The chief advantages of the present Collodions are, increased sensibility, and the power of retaining, when iodized, a high degree of sensibility a very considerable time. Mainly on account of this quality, Ponting's has risen into very high repute, and is used by a vast number of professional and amateur photographers. Mr. Hardwich's preparations are also excellent, and have a very extended sale: (Mr. Delamotte's large picture of the Crystal Palace in the late Exhibition, which is so remarkable for the delicacy of its half-tone, and for other fine qualities, having been taken with this Collodion,) and lastly, Mr. Thomas, who has so long been noted for his, says he has produced a Collodion which is "superior in quality, and uniform in composition," and which "will take precedence" of his well-known preparation, called "Xylo Iodide."

The Collodions of these three makers,—Thomas, Hardwich, and Ponting,—*for whom we are the appointed agents*,—we mention thus particularly, because they are unquestionably equal to any in use: we shall, however, be happy to supply to order the Collodions of other manufacturers, or to place them in our lists if they possess distinct advantages, or have well-defined recommendations. For instance, it is generally admitted that Keene's Collodion is the most suitable for the "*Fothergill*" process; we have therefore undertaken, and are the named Agents for the sale of it.

INSTANTANEOUS PICTURES.

We have contrived, in place of the ordinary cap of the Lens, a *quick shutter*, which is both simple and effective. It can be adapted to any Lens, and by merely altering its position, the time of exposure of the picture can be varied. It was made for, and used by, Mr. Lake

Price, for his instantaneous pictures, long before some other contrivances that are now advertised to accomplish the same object.

DEVELOPERS.

An approach to the order in which the various processes occur in actual practice, has been attempted in the arrangement of these headings; here, therefore, is the proper place to speak of Developers. Many operators still use pyrogallic acid, and in hot weather, especially if working in a tent, *pyrogallic with citric acid*, is extremely useful. Mr. Hardwich gives the following formula for this solution:—

Pyrogallic Acid	1½ grains.
Citric Acid	¾ grain.
Alcohol	20 minims.
Water	1 ounce.

and in speaking of the *ordinary* pyrogallic developer in his “Photographic Chemistry,” he says, “that when working at high temperatures “it acts so quickly, that it is impossible to cover the plate before the “reduction begins.” The pyrogallic and citric developer will, however, flow evenly over the film, and the image will not appear until after an interval of twenty or thirty seconds; it also has a marked effect in preventing red solarization in a brilliant light, and in preserving the surface of the film from fogging.

Mr. Hardwich says, “on the other hand, it is not suited for working “in a glass house in a bad light and cold weather, nor for copying “works of art with long focus lenses, or for taking interiors.” We mention this to prevent disappointment; it will, however, be seen that we are here addressing ourselves principally to the question of “*out-door Photography*,” for which, for the reasons previously stated, this developer will be found very serviceable.

Sulphate of Iron as a developer is very generally and very deservedly coming into use. Of this agent, Mr. Hardwich says, “it will bring out

“a perfect picture, when, from some opposing conditions, the ordinary “developer proves ineffectual.” He gives for this solution, the following formula :—

Sulphate of Iron	15 grains.
Glacial Acetic Acid	30 minims.
Distilled Water	1 ounce.

and he adds, “that in mild weather the proportion of the Iron Salt “may be reduced to ten or twelve grains,” and that “sometimes six “grains of Crystallized Acetate of Soda are added to increase the intensity.”

The formula we have been in the habit of using, is—

Sulphate of Iron	10 grains.
(which in hot-weather reduce to 8.)		
Glacial Acetic Acid	10 minims.
Alcohol..	20 minims.
Distilled Water	1 ounce.

PLAN FOR DEFERRING THE FIXING OF NEGATIVES.

If the fixing of a Negative could be done some hours after it is taken, the Negative thereby suffering no injury, and the result, in all respects, being equal to fixing on the spot, a great advantage would be gained. The number of processes in the field would be reduced, time economised, and Negatives be not liable to injury from insufficient washing: the space required for, and the weight of the fixing solutions would be saved, and a very small quantity of water would be ample for a day's work. To accomplish this, a means is required for preventing the film from drying. The use of deliquescent salts might do this; honey, or oxymel thinned with water certainly would, but the plan which appears to be the best is this :—

Have a Plate Box for Negatives, similar to that hereafter described, and after the application of any of the developers previously mentioned, and the usual washing—a small quantity of water being sufficient for this—coat the Negative with *Glycerine and water* mixed in equal proportions, (pouring off the excess in the ordinary way,) and put it carefully into the Plate Box. It can then be fixed after returning home, the next day, or indeed within any reasonable time; all that is required is, in the first place, to wash off the Glycerine, and this it will be found can be done very readily.

Nor is it necessary to obtain by the development in the field, the whole intensity the Negative is capable of giving. Generally, in using the iron salts, sufficient is accomplished if all the required details of the picture appear; any degree of intensity can be got by using the formula given below, which was published by Mr. Shadbolt, in the *Liverpool Photographic Journal*—

“Fix with Hypo-sulphite of Soda, wash well with common water, drain slightly, and then wash with a few ounces of distilled water, again drain, and pour on a solution in the proportions of—

Pyrogallic Acid	2 grains.
Citric Acid	1 grain.
Distilled Water	1 ounce.

to which add about 20 drops of pure solution of Nitrate of Silver (about 30 grains to the ounce) but not that previously used for baths or any other purpose. Finally wash well: no more fixing will be required.”

PLATE AND DRAINING BOXES, DRAINING FRAMES, &c.

The arrangement for glass plates of the division of the Field-box, as described under that head, so far as it relates to gutta-percha grooves, and indian-rubber cushions, is carried out in our Boxes for Plates of all sizes;—these will be found to be a great improve-

ment. The plate box mentioned in the last heading, has, in addition to these improvements, a prepared and hinged bottom for *drainage*, by which it is rendered suitable for the reception of undried negatives.

We also introduced the *metal-plate boxes* with metal grooves; they are very portable, (the space required for a dozen plates being no greater than that occupied by six in the ordinary boxes,) and are chiefly used for prepared plates for any of the dry processes, as they are quite light-tight.

The *draining frame* is a convenient and portable form of rack for plates when cleaning; and is admitted to be one of the most useful of the minor Photographic contrivances.

PRESERVATIVE PROCESSES.

The chief of these are very fully described in Mr. Hardwich's book. Without attempting to distinguish any in particular, we mention that our own experience has proved that the following are simple and certain, and may be recommended for adoption by those who determine to follow the Preservative system: viz., the Oxymel of Mr. Llewelyn, the "Fothergill," and Mr. Cleaver's modification of Maxwell Lyte's process.

We have, also, some very good specimens taken by Mr. Sisson's process, which was published in the "Times," of the 17th November, 1858; but, in this instance, we think it desirable to obtain more experience, before we undertake the responsibility of recommending it.

STEREOSCOPIC CAMERAS FOR THE PRESERVATIVE PROCESSES.

We have two Cameras designed for these processes:—our own, (which with six dark slides for plates, packs in a box—the latter being the table of the Camera when in use); and that known as the inven-

tion of Mr. Marriott, which is unquestionably the best of the Cameras made. It is arranged to contain one dozen prepared plates (any one of which can be exposed when desired,) and is adapted for two lenses. These may be used either singly or together, the Camera being provided with a circular front, with which two double pictures may be taken consecutively; or the right or left-hand portions of either one or two sensitized plates exposed as required;—there is likewise an *instantaneous movement* for uncovering the plates. It is also compact and light, its dimensions being 8 by 8 by $5\frac{1}{2}$ inches, and its weight $4\frac{1}{4}$ lbs. It supersedes the use of a *dark box*, and the necessity of changing the plates in the ordinary way.

VARIOUS NEW CONTRIVANCES.

Among these are:—

A Pneumatic Holder,

A Collodion Pourer,

Improved Glass Dishes for Sensitizing,

And a Levelling Stand for preparing Plates by the Preservative Processes.

BOOKS ON PHOTOGRAPHY.

There are many works on the subject of Photography it might be very desirable for the operator to make himself master of; we think, however, we may venture to say that the two most important and valuable are Mr. Hardwich's and Mr. Lake Price's:—there is so much that is eminently practical in both these books, that no Photographer should be without them.

THE PERMANENCY OF PHOTOGRAPHS.

With a few words upon this question, we conclude this paper. The subject of permanence has ever been the great anxiety of Photographers, but during the last few months there has arisen in many

quarters evidences of the fact of our being on the threshold of a permanent process. At all events, the researches of Sir John Herschel, Mr. Burnett, M. Niepce de St. Victor, Herr Pretsch, Mr. Fox Talbot, and Mr. Pouncy, place means of a very permanent nature at the command of those who desire to retain the results of their negatives. In ordinary positive printing, great expectations are also entertained of Mr. Hardwich's toning process by *Alkaline Chloride of Gold*; but the assertion of M. Niepce, which we append as an appropriate conclusion to this heading and our circular, is probably the most striking and interesting.

M. Niepce says, "that pictures printed with a Salt of Uranium, and developed with Nitrate of Silver, will resist the energetic action of a boiling solution of Cyanide of Potassium." And he adds: "everything therefore leads to the hope that this new mode of printing positives, is the sought-for solution of that important problem—the absolute fixing of Photographic Pictures."

MURRAY & HEATH.

43, PICCADILLY, LONDON, W.

31st March, 1859.



NOTE.—MESSRS. MURRAY & HEATH reserve the right to charge,
at their discretion, the sum of Sixpence for this Pamphlet.

NOTICE—MILERS, BUREAU & HEATHMAN, the right to change
of their location, the sum of \$25000 for this year, 1883.